

Z-67 TEST PROCEDURE GUIDE

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<u>PAGE</u>	<u>INFORMATION GUIDE</u>
1	SPECIAL INSTRUCTIONS(WARNINGS AND NOTES)
2-3	Z-67 INSTALLATION AND PARTITION PROCEDURES
4	Z-67 PREP67 WINCHESTER DIAGNOSTIC PROCEDURE
5	Z-67 MAKEBIOS PROCEDURES
6	Z-67 MOVCPM67 AND SYSGEN PROCEDURES
7-8	Z-67 ASSIGN AND MAKING THE Z67 BOOTABLE PROCEDURES
9	Z-89-67 CONTROLLER JUMPER CHECKOUT
10	Z-89-67 AND DTC RESPONSE CHECKOUT
11	UNIT DEAD NO POWER INDICATOR
12	UNIT DEAD POWER INDICATOR LIGHT LITE
13	UNABLE TO WRITE TO FLOPPY OR WINCHESTER
14	UNABLE TO ACCESS FLOPPY OR WINCHESTER READ/WRITE
15	PREP67 ERROR MESSAGES

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*
* WARNING : THE Z-67 IS A VERY DELICATE PIECE OF EQUIPMENT. IT CANNOT
*
* BE MOVED OR BUMPED WHILE POWER IS APPLIED OR FOR 2 MINUTES
*
* AFTER THE POWER HAS BEEN TURNED OFF. PLEASE FOLLOW THESE
*
* WARNINGS OR IRREPAIRABLE DAMAGE TO THE HARD DISK DRIVE
*
* MAY OCCUR. SECOND, THE UNIT MUST *NOT* BE OPERATED WITH
*
* THE TOP REMOVED. WITHOUT THE TOP COVER, THE HARD DISK
*
* DRIVE WILL NOT RECEIVE SUFFICIENT AIR FLOW TO STAY COOL.
*
* AND LAST, THE AMBIENT AIR TEMPERATURE AROUND THE UNIT MUST
*
* *NOT* EXCEED 90 DEGREES FAHRENHEIT DURING IT'S OPERATION.
*
*
*

NOTE: ALL MEASUREMENTS WERE TAKEN USING A LEADER LDM-851 DIGITAL VOM.
ALLOW ONLY 10% TOLERANCE DIFFERENCE IN METER READING BECAUSE
THE POWER SUPPLY USED IS WELL REGULATED. EXCESSIVE VOLTAGE MAY
DAMAGE UNIT.

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PARTITION PROCEDURE

The following instructions describe the procedures for installing a Z-67. These procedures assume a basic understanding of CP/M and Z-89/90 operation. With that in mind, here is how to get your Z-67 up and running quickly and with a minimum amount of effort:

1. Install the Z-89-67 into the Z-89 or Z-90 in accordance with the instructions in the Z-89-67 installation manual. Set Sw501, the dip switch on the CPU board, for a Z-67 primary boot. (Refer to page 9 for switch settings and jumper configuration.)
2. Check the cable (134-1219) that connects the Z-89-67 controller card to the back of the Z-89/90 for proper number one pin position.
3. Flip the floppy disk (right hand) write protect switch on the Z-67 to the up position.
4. Insert the H/Z-67 Diagnostic/Partitioning Utilities Disk(HCB-867-2) into the Z-27 floppy disk drive.
5. Boot the system from unit one (boot1). To do this, type *B* for boot. Then press number *1* followed by a carriage return to cause the system to access the floppy disk instead of the Winchester disk.
6. When the system displays the Partition/Preparation Utility Menu, select option *B*, the system will run PREP67. This is a diagnostic utility and will take about an hour to complete. (Note:PREP67 has been run by the factory prior to shipment. This step may be skipped over, unless indicated by the partition program)
7. When the system displays the Partition/Preparation Utility Menu, select option *A*, this will take you into the partitioning section of the utility program.
8. When the Winchester Disk Partition Utility is displayed on the screen, Press *A* for all CP/M to be partitioned.
9. Press <CR> in response to "Allocation Correct <NO>?"
10. The main menu will reappear. This time select option *H* for user defined options.
11. Press *O* to change set option.
12. "Operating System ID (S,U,A-P) <U> ?", Will be displayed. Select *B*.
13. "Operating System Name < >?", Enter in *CPM1* <CR>.
14. Press *P* for set partition.

=====

15. "[CPM1] From Region ?", Type *C0* <CR>.
16. "[CPM1] To Region ?", Type *F3* <CR>.
17. "[CPM1] <DONE> ?", Type <CR>.
18. Press <CR> to Display partition format screen. Check to see if partition display is formatted correctly.
19. Press *S* to perform the partition on the disk.
20. Enter *<CR>* for the default boot string.
21. Enter *<CR>* to printout option.
22. Partition is now complete. Proceed to Makebios.Com, Sysgen.Com Assign.Com.

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Note: Prior to shipment from the HEATH/ZENITH DATA SYSTEM'S factory, the PREP67 utility is run on the Winchester Disk Drive. The Winchester drive, as received from the factory or store has been initialized, checked and prepared for operation with the PREP67 Utility. You do not need to run the PREP67 utility unless the Partition utility detects an error requiring PREP67 to be run.

To run the PREP67 Utility, insert the H/Z-67 Diagnostic/Partitioning Utilities Disk (this disk is supplied with the Z67 Drive Unit) into the Seimens floppy drive and press *B1*. This will activate the floppy drive. The drive light will come on and go off several times for about one or two minutes. This is normal. After the disk has finished booting up the following menu will be displayed.

H/Z-67 PARTITIONING-PREPARTION MENU

A-WINCHESTER DISK PARTITIONING UTILITY
B-WINCHESTER DISK DIAGNOSTIC/PREPARATION UTILITY
C-EXIT

SELECTION ?: (RESPOND WITH *B*<CR>)
'After several seconds the following menu
will appear.'

PREP67 FOR THE WINCHESTER DISK
COPYRIGHT (C) 1981 HEATH/ZENITH DATA SYSTEMS

THIS ROUTINE IS USED TO :

1. INITIALIZE THE WINCHESTER DISK
2. PERFORM MEDIA CHECK ON THE WINCHESTER DISK SURFACE
3. INITIALIZE TABLES FOR USE WITH THE PARTITIONING UTILITY, PART

PREP67 IS A STANDALONE UTILITY. IT WILL DESTROY ALL FILES ON THE WINCHESTER DISK.

DO NOT USE PREP67 UNTIL YOU HAVE MADE A BACKUP OF THE FILES CURRENTLY ON THE WINCHESTER DISK.

PROCEED (YES/NO)? (RESPOND WITH *YES*)

PLEASE TYPE P TO PROCEED (RESPOND WITH THE LETTER *P* <CR>)
'PREP67 will take about an hour to
run and then it will display the
main menu.'

After the Prepartition Utility has displayed the main menu, then proceed to the Partition Utility.

=====

MAKEBIOS.COM

This is a quick and simple way of making BIOS. In this version We will be using 3 5 1/4 inch hard sector drives. Using back up copies of the CPM Distribution Disk. Boot in A: the Distribution Disk #I. In drive B: install Distribution Disk # III, and in C: install a blank formatted disk.

>*SUBMIT B:MAKEBIOS C:NEWBIOS B:* <CR>

>MAKEBIOS 1 C:NEWBIOS

BIOS SELECTION MENU

A -- H17 ONLY
B -- H37 ONLY
C -- H47 ONLY
D -- H67 ONLY
E -- H17 AND H37
F -- H17 AND H47
G -- H17 AND H67
H -- H37 AND H47
I -- H37 AND H67
J -- H47 AND H67

Displayed on the CRT SCREEN

ENTER IN SELECTION : *G*

<CR>

'G is the selected option for H17 and H67'

A>ASM BIOS.AAZ
CP/M ASSEMBLER - VER 2.0
1560
02EH USE FACTOR
END OF ASSEMBLY

A>REN BIOS.HX0=BIOS.HEX
A>MAKEBIOS 2 C:NEWBIOS

'Displayed on the CRT SCREEN.
This will take about 15 min.'

A>ASM BIOS.AAZ
CP/M ASSEMBLER - VER 2.0
1660
02EH USE FACTOR
END OF ASSEMBLY

A>REN BIOS.HX1=BIOS.HEX
A>PREL BIOS C:NEWBIOS

A>MAKEBIOS 3 C:NEWBIOS

MAKEBIOS FUNCTION COMPLETE

A>*MOVCPM17 64 C:NEWBIOS* <CR>. 'make the new system bios
configured for 64K'

MOVCPM17 VER 2.2.03

CONSTRUCTING 64K CP/M ver 2.2
READY FOR "SYSGEN" OR
"SAVE 38 CPM64.COM"

A>*SYSGEN* <CR>. 'SYSGEN the new disk'

SYSGEN VER 2.2.03

SOURCE DRIVE NAME (OR RETURN TO SKIP): *RETURN*

DESTINATION DRIVE NAME (OR RETURN TO REBOOT): *C*

DESTINATION ON C, THEN TYPE RETURN *RETURN*

FUNCTION COMPLETE

DESTINATION DRIVE NAME (OR RETURN TO REBOOT): *RETURN*

A>*REN C:BIOS.SYS=C:NEWBIOS* 'Set to BIOS.SYS'

A>*STAT C:BIOS.SYS \$R/O* 'Set to read only'

A>*STAT C:BIOS.SYS \$SYS* 'Set to System'

A>*PIP C:=A:CONFIGUR.COM* 'Copy Configur on to disk'

A>*PIP C:=A:STAT.COM* 'Copy Stat on to disk'

A>*PIP C:=A:PIP.COM* 'Copy Pip on to disk'

Remove Distribution Disk III in dive B: and install Distribution Disk II

A>*PIP C:=B:MOVCPM67.COM* 'Copy Movecpm67 to disk'

A>*PIP C:=A:SYSGEN.COM* 'Copy Sysgen to disk'

A>*PIP C:=A:ASSIGN.COM* 'Copy Assign to disk'

A>*PIP C:=A:FORMAT.COM* 'Copy Format to disk'

This disk is now your new systems disk. This disk is now able to access the
Z-67 and the Z-89/Z-90 through the Hard sector disk drive. Be sure to make
back up copies of the new working disk.

=====

ASSIGN.COM

A>*ASSIGN ?* <CR>.

PARTITION NAME	MAXIMUM OCCURRENCE NUMBER
CPM	0
CPM1	0

'This is displayed
by the computer
telling you how
the partition is
set up'

A>*ASSIGN D:=CPM;0* <CR>.

PARTITION NAME

OCCURRENCE NUMBER
LOGICAL DRIVE NAME

A>*ASSIGN* <CR>.

D: = CPM

'This is the
assigned partition

A>*FORMAT* <CR>.

FORMAT Version 2.03

This program is used to initialize a disk.

All information currently on the disk will be destroyed.

Is that what you want? (y/n): "Y"

Which drive do you wish to use for this operation?: *D*

Put the disk you wish to formatted in drive D:

Press RETURN to begin. *<CR>*

FORMATING PARTITION

Z67 Disk Procedures
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Page 8

Make the Z-67 Bootable

A>*SYSGEN* <CR>. 'SYSGEN the new disk'

SYSGEN VER 2.2.03

SOURCE DRIVE NAME (OR RETURN TO SKIP): *A*

DESTINATION ON A, THEN TYPE RETURN *RETURN*

COPY BIOS.SYS (Y/N): *Y*

DESTINATION DRIVE NAME (OR RETURN TO REBOOT): *C*

DESTINATION ON C, THEN TYPE RETURN *RETURN*

FUNCTION COMPLETE

DESTINATION DRIVE NAME (OR RETURN TO REBOOT): *RETURN*

A>*MOVCPM67* 'Size up memory'

MOVCPM67 VER 2.2.03

CONSTRUCTING 64K CP/M ver 2.2
READY FOR "SYSGEN" OR
"SAVE 38 CPM64.COM"

A>*SYSGEN* <CR>. 'SYSGEN the new disk'

SYSGEN VER 2.2.03

SOURCE DRIVE NAME (OR RETURN TO SKIP): *RETURN*

DESTINATION DRIVE NAME (OR RETURN TO REBOOT): *C*

DESTINATION ON C, THEN TYPE RETURN *RETURN*

FUNCTION COMPLETE

DESTINATION DRIVE NAME (OR RETURN TO REBOOT): *RETURN*

A>PIP D:=A:*. * (this is to be type followed by a <CR>.)
'Copy all files over to the Z-67'

This completes the procedure for making the Z-67 Bootable

Z-89-67 Set-Up

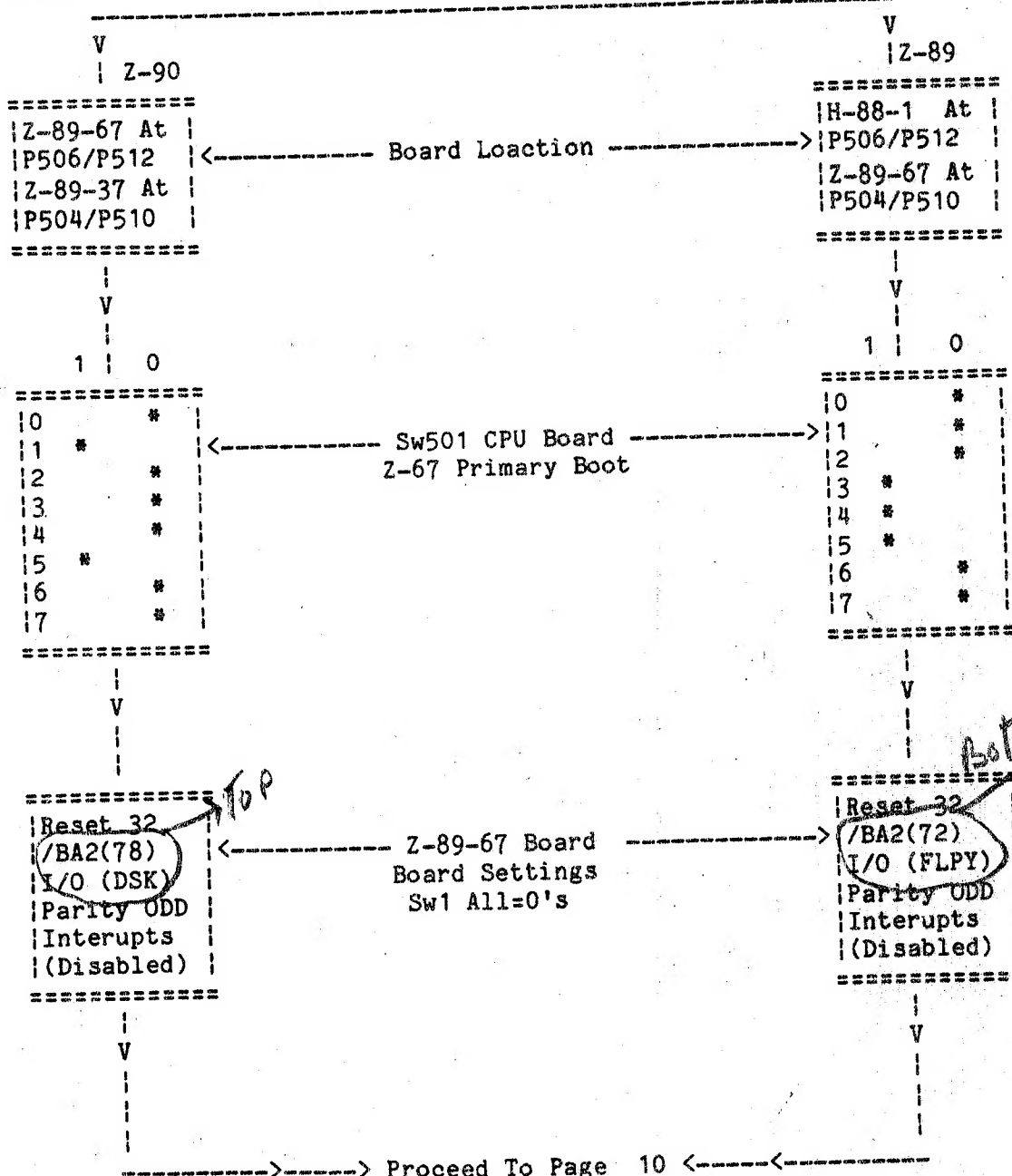
```

=====
|Z-89-67|
|Jumper|
|Set-Up|
=====

```

Ports: 170/171

174/175



Note: The dip switch on the Z-89-67 controller card SW1 is not used.

Z-89-67 And DTC Controller Checkout Routine

```

=====
|Unit Will Not |
|Boot 8' Floppy |
|Disk Drive    |
=====

```

Z-89-67 Installed At

Ports: 170/173

174/177

After the Z-67 has been installed to the Z89/Z90 Computer the following Program can be keyed into the computer via the computers monitor. This routine will check out the status register of the DTC Controller card installed internally in the Z-67. If this program displays NOT OK !" then the problem can be in one of three different area's. First check to see that the cables are correctly installed either internally in the computer or between the computer and the Z-67. The next area of difficulty can be in the Z-89-67 Controller Card. The final area can be with the DTC Controller Card Loacated internally in the Z-67.

- (1). Turn on both the computer and the Z-67 units.
- (2). The H: will Appear in the upper left hand corner.
- (3). Press the *S* key and the word Substitute will be completed.
- (4). Enter *060000* followed by a <CR>.
- (5). Enter in the correct column of numbers followed by a <SPACE>.
- (6). After the last entry hit a <CR>.
- (7). The H: will appear again. Press 'S'key again and the word Substitute will be completed.
- (8). By pressing the <SPACE BAR> you can double check what you have entered.
- (9). After the last entry hit a <CR>.
- (10). The H: will appear again. Press the *G* key and GO will be completed.
- (11). Enter *060000* <CR>. and the program will run itself.

If everthing is connected properly "OK !" will scroll on the screen. If there is any type of problem "NOT OK !" will scroll on the screen.

Install in place of '***' "171" for port 170/173 or "175" for port 174/177.

Address	Data	Address	Data	Address	Data	Address	Data	Address	Data
060000	076	060015	036	060032	110	060047	315	060064	057
060001	020	060016	060	060033	312	060050	100	060065	060
060002	323	060017	076	060034	044	060051	006	060066	116
060003	***	060020	110	060035	060	060052	303	060067	117
060004	315	060021	323	060036	041	060053	000	060070	124
060005	055	060022	***	060037	066	060054	060	060071	040
060006	060	060023	315	060040	060	060055	076	060072	000
060007	257	060024	055	060041	315	060056	255	060073	117
060010	333	060025	060	060042	100	060056	075	060074	113
060011	***	060026	257	060043	006	060060	376	060075	040
060012	376	060027	333	060044	041	060061	000	060076	041
060013	100	060030	***	060045	073	060062	310	060077	012
060014	302	060031	376	060046	060	060063	303	060100	015
								060101	000

```
|Unit Dead      |
|No Power      |
|Indicator Light|
```

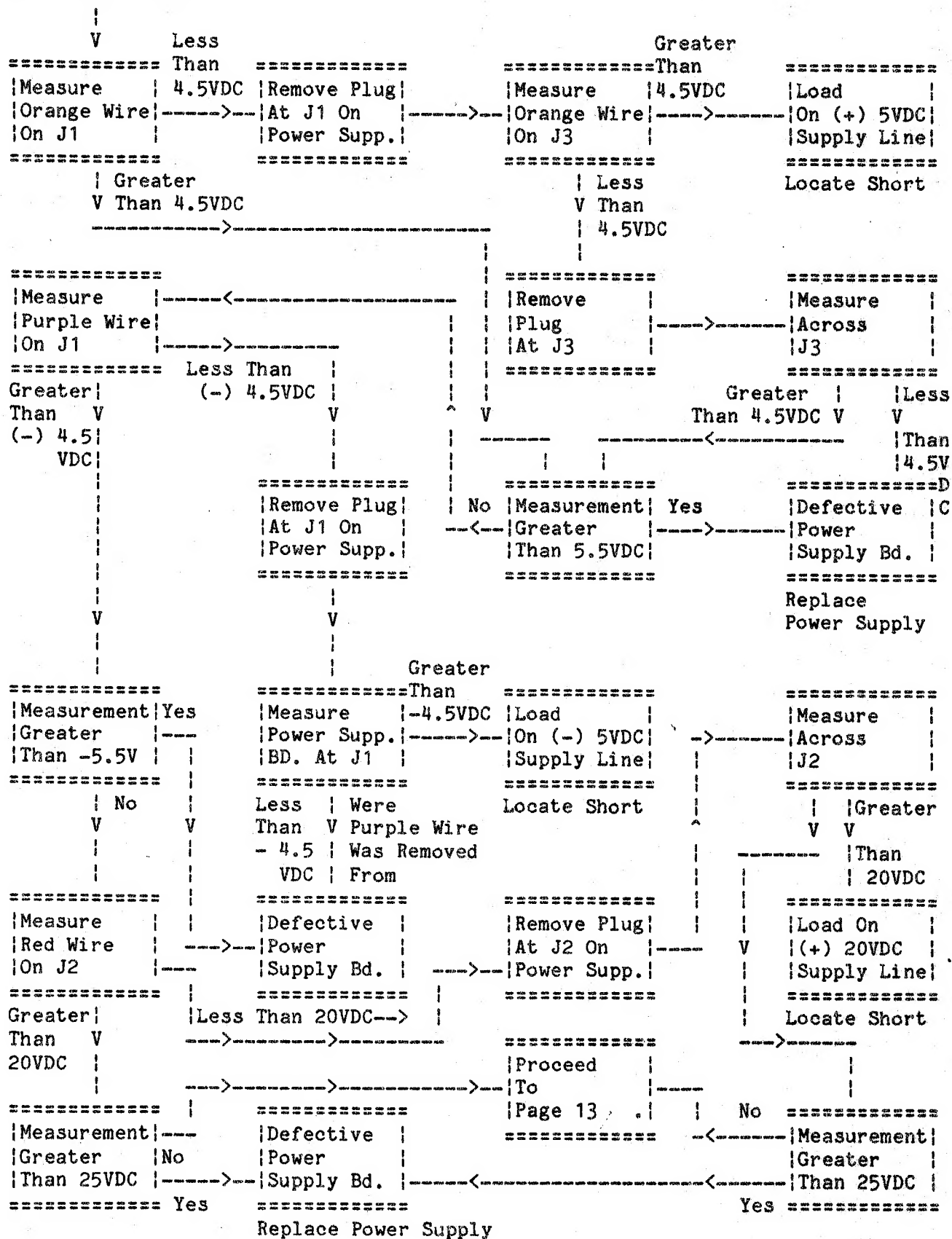
General Checkout

```

=====
| Check Fuse | Bad | Replace | Measure | 50 Ohms | Remove Plug |
| Located at | -----> | Fuse | Ohms Across | -----> | From Power |
| Back Panel | | | AC Cord | | Supply Bd. |
=====
| Good | | Greater | | |
| V | | Than 50 Ohms V | | V |
|-----<-----|
| | | | | |
| Measure | | Remove Plug | 50 Ohms | Measure |
| Ohms Across | -----< | From Floppy | | Ohms Across |
| AC Cord | | Motor | | AC Cord |
=====
| Less | | Greater Than 170 Ohms | | Greater |
| Than V | | | | V Than |
| 50 Ohms | | | | 50 Ohms |
|----->-----|
| | | | | |
| Check Fuse | Bad | Short in | Defective | Defective |
| Locate On | ----- | Wiring on | Floppy | Power Supp. |
| Power Supp. | | AC Side | Motor | Board |
=====
| Good | | Floppy Motor | Replace |
| V | | Should Be 80 Ohms | Power Supply |
|----->-----|
| | | | | | |
| Proceed | | Replace | Measure | 130 Ohms | Remove |
| To | -----> | Power Supp. | Resistance | -----> | Plug |
| Page 12 | | Fuse | On Red Wire | | J2 |
=====
| | | | | |
| | | Greater | | On Power |
| | | Than | | Supply |
| | | 100 Ohms | | Board |
| | | | |
| Remove | 100 Ohms | Measure | | Measure |
| J1 | -----< | Resis. on | | Across |
| | | Purple Wire | Greater | J2 |
|-----<-----|
| | | | | | | |
| | | 100 Ohms | | Less |
| | | | | V 100 Ohms | | V Than |
| | | | | 100 |
| | | | | Ohms |
|----->-----|
| Measure | 100 Ohms | Cause Is A | Proceed | | Replace |
| Across J1 | -----> | Load On | To | -----< | Power Supp. |
| On Power BD | | Cable | Page 12 | | Board |
=====
| Greater | | | |
| Than | | | |
| 100 Ohms | | | |

```

Power Supply Board



```

=====
|Unit           |
|Unable To Write|
|To Disk       |
=====

```

```

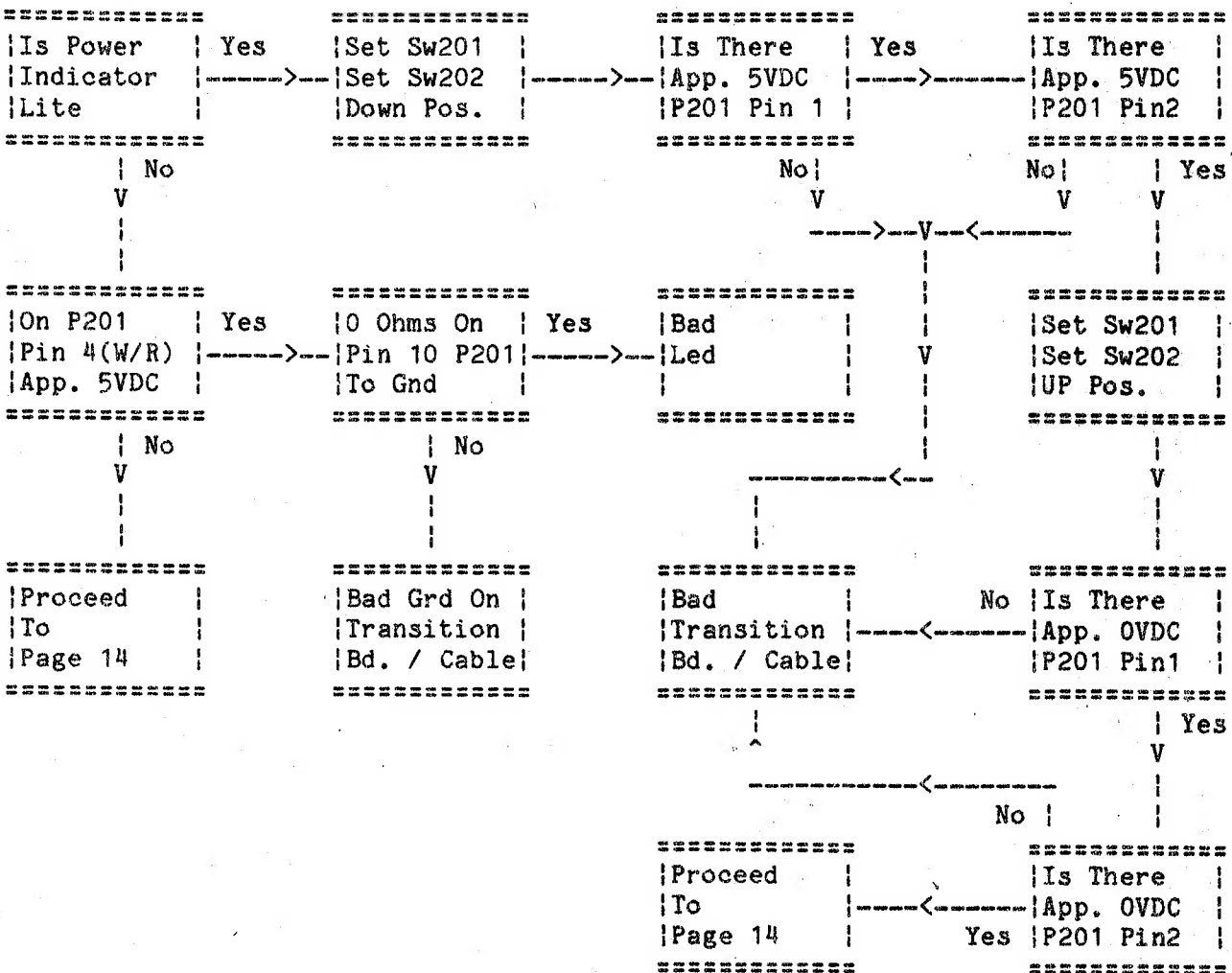
-----
Write Protect Board
-----

```

```

|
V

```



701	705	709	713	717	721	725	729	733	737	741	745	749	753	757	761	765	769	773	777	781	785	789	793	797	801	805	809	813	817	821	825	829	833	837	841	845	849	853	857	861	865	869	873	877	881	885	889	893	897	901	905	909	913	917	921	925	929	933	937	941	945	949	953	957	961	965	969	973	977	981	985	989	993	997	1001	1005	1009	1013	1017	1021	1025	1029	1033	1037	1041	1045	1049	1053	1057	1061	1065	1069	1073	1077	1081	1085	1089	1093	1097	1101	1105	1109	1113	1117	1121	1125	1129	1133	1137	1141	1145	1149	1153	1157	1161	1165	1169	1173	1177	1181	1185	1189	1193	1197	1201	1205	1209	1213	1217	1221	1225	1229	1233	1237	1241	1245	1249	1253	1257	1261	1265	1269	1273	1277	1281	1285	1289	1293	1297	1301	1305	1309	1313	1317	1321	1325	1329	1333	1337	1341	1345	1349	1353	1357	1361	1365	1369	1373	1377	1381	1385	1389	1393	1397	1401	1405	1409	1413	1417	1421	1425	1429	1433	1437	1441	1445	1449	1453	1457	1461	1465	1469	1473	1477	1481	1485	1489	1493	1497	1501	1505	1509	1513	1517	1521	1525	1529	1533	1537	1541	1545	1549	1553	1557	1561	1565	1569	1573	1577	1581	1585	1589	1593	1597	1601	1605	1609	1613	1617	1621	1625	1629	1633	1637	1641	1645	1649	1653	1657	1661	1665	1669	1673	1677	1681	1685	1689	1693	1697	1701	1705	1709	1713	1717	1721	1725	1729	1733	1737	1741	1745	1749	1753	1757	1761	1765	1769	1773	1777	1781	1785	1789	1793	1797	1801	1805	1809	1813	1817	1821	1825	1829	1833	1837	1841	1845	1849	1853	1857	1861	1865	1869	1873	1877	1881	1885	1889	1893	1897	1901	1905	1909	1913	1917	1921	1925	1929	1933	1937	1941	1945	1949	1953	1957	1961	1965	1969	1973	1977	1981	1985	1989	1993	1997	2001	2005	2009	2013	2017	2021	2025	2029	2033	2037	2041	2045	2049	2053	2057	2061	2065	2069	2073	2077	2081	2085	2089	2093	2097	2101	2105	2109	2113	2117	2121	2125	2129	2133	2137	2141	2145	2149	2153	2157	2161	2165	2169	2173	2177	2181	2185	2189	2193	2197	2201	2205	2209	2213	2217	2221	2225	2229	2233	2237	2241	2245	2249	2253	2257	2261	2265	2269	2273	2277	2281	2285	2289	2293	2297	2301	2305	2309	2313	2317	2321	2325	2329	2333	2337	2341	2345	2349	2353	2357	2361	2365	2369	2373	2377	2381	2385	2389	2393	2397	2401	2405	2409	2413	2417	2421	2425	2429	2433	2437	2441	2445	2449	2453	2457	2461	2465	2469	2473	2477	2481	2485	2489	2493	2497	2501	2505	2509	2513	2517	2521	2525	2529	2533	2537	2541	2545	25
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	----

Press "B1" To Boot The Floppy Drive



Z67 DISK DRIVE CHECKOUT PROCEDURE

=====

If no errors are encountered during the PREP67 process, control is transferred to the main menu. If no errors are encountered during the Prep67 and the Partitioning Utilities, then the Z67 unit is up and running.

PREP67 ERROR MESSAGES

If an error is encountered while running PREP67, one of the following error messages will be displayed at your terminal:

1. Wrong drive type.
2. Drive is not ready.
3. Error during formatting of the drive.
4. Track 0 contains bad sector(s).
5. Bad sector count exceeded for this drive.
6. Request sense status error.
7. Status parity error.
8. Host adapter parity error.
9. Completion byte is non zero.
10. Internal error.

followed immediately by,

Test Aborted

If you encounter an error, verify that the drive type and hardware setting on the disk controller board are set correctly.